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ABSTRACT

This paper suggests that one possibility for the lack of study emphasis and unity of understanding in the area of dual language development is that language study in general shows some serious gaps and reveals a need for viewing language development as a holistic endeavor. Noting the failures of Skinnerian theory, Chomskian theory, Soviet dialectics, and traditional Piagetian language study to produce a unifying theory of language study in general and of dual language study in particular, the paper proposes a move beyond traditional Piagetian language study to his theory of equilibration for language explanations. The three major sections of the paper then provide: (1) a general definition of J. Piaget's equilibration theory; (2) a discussion of six main juncture points where language and the equilibration process might begin to relate; and (3) a brief summary of the F. Valerio case study, which relates the bilingual development of a Mexican-American child as a particular dual language equilibration process. The final section offers a summary and conclusions. (FL)

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JEAN PIAGET'S THEORY OF EQUILIBRATION
APPLIED TO DUAL LANGUAGE DEVELOPMENT

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I. INTRODUCTION

An area in much need of research study and theoretical clarification is dual language development. On the one hand, the earlier literature (Cordasco, 1978) emphasized the debilitating effects of bilingualism. The more recent literature (especially Canadian) (Spolsky, 1977) on the other hand, presents the more positive effects of bilingualism. There are, of course, many possible reasons for the lack of study emphasis and unity of understanding in this area of language development. This paper suggests that one possibility for this state of affairs is that language study in general shows some serious gaps--one of which is a need for viewing language development as a holistic endeavor.

First we spent our time rigorously shunning the "a lo bravo" external reinforcements effects of Skinner. In this endeavor we forgot these mild but important and equal effects. Secondly, we turned our attention to Chomskian theory which is highly regarded and from which we grew immensely, but whose almost "a lo bravo" native or hereditary effects also needed some tempering. What was logically needed now was an interaction theory--a dialectic theory to coordinate the two above-mentioned factors. The Soviets offered us language dialectics but only recently have we returned to them. J. Piaget also had an interaction theory. We did turn to

Piaget; however, it was not for a dialectic and unifying theory. The attention was focused on the relationship of cognition and language and there it stopped. The consequence was that even from our Piagetian study attempts we failed to find what this paper thinks is sorely needed for language in general and for dual-language in particular--a unifying theory of its development.

Corrigan (1979) suggests that we move beyond the Piagetian tradition in language study. This paper's main purpose is to suggest that we move beyond the traditional Piagetian tradition of language study and focus and borrow from his theory of equilibration for language explanations before completely abandoning him (with regard to his language contributions).

This paper will attempt the following:

1. A dialectic view of language development by presenting a very general definition of J. Piaget's equilibration theory.
2. Six main juncture points where language and the equilibration process might begin to relate.
3. A brief summary of the Valerio (1980) study where we can see the bilingual development of Jose as a particular dual language equilibration process.
4. Summary and Conclusions.

II. LANGUAGE DEVELOPMENT

Dialectic Explanation

Moore (1973) stressed that:

Traditionally relatively little attention was directed at either the physical and social characteristics of the environment in which the utterances occurred or to the general cognitive capacities of the child at that particular time (p. 5).

He also mentions that:

Although many ingenious techniques have been developed, they tend to yield knowledge of specific language competencies rather than a general overall picture of the child's system. Clearly there is no well-defined paradigm for the study of language acquisition (p. 5).

While the lack of attention to the physical characteristics of the environment and to the general cognitive capacities of the child has been remedied the lack of focused attention to the social characteristics of the environment and the failure to yet present a general overall picture of the child's system still remain.

Very few language scholars deny the cognitive frameworks for language development. By the same token it is acknowledged that cognition in order to reach formal/abstract levels develops and includes various kinds of symbolic contributions, one of which is linguistic, in and within such a framework.

In fact because an over-emphasis has been placed on what Harris (1975), quoting Reigel, calls mentalistic explanations of language the social interaction factors have received less attention than is their due. Harris (1975) warns that:

...our understanding of the phenomena of language learning remains impoverished and can be enriched only when the descriptive accounts of linguistic structure, whether syntactic or semantic are placed within the setting of social and productive interaction (p. 82).

Harris (1975) reflects on the fact that:

Traditionally, psycholinguistics identified language acquisition with acquisition of syntactic structures. Later semantics and cognitive base have become a more central concern. However, regardless of the subject matter under scrutiny, the analysis thus far is always of individual output (p. 8).

Harris' (1975) impression is that the child in the post Chomskian universe lives in a world without human communication, an acolyte scientist surrounded with epistemological intention, seeking structure in language and in experience (p. 82).

Gusdorf (1977) shares a similar view when he states the following:

Traditional theories are wrong in seeing in language a kind of mental duplication of the world--as if the universe of discourse could exist outside the universe of things, as if words were not all that we can grasp of the world, its intrinsic reality and the flesh of its flesh. The world is given to each of us as a body of meanings, the disclosure of which we obtain only on the level of speech. Language is reality (p. 48).

The most recent views proposed now for language suggest the inclusion of "dialectic" theories of development. With this phenomenology, communication, dialogue, the speech act, or social discourse, are given as much importance as mentalistic aspects (whether linguistic or non-linguistic).

Language development begins as an "open system." An open-system involves dialectics (give and take between polar forces).

Dialectics and an open-system stress that all experiences and all matter too is essentially contradictory (Harris, 1975, p. 87).

For Harris (1975):

Contradiction in the discourse is identified at the level of symbolization, message, exchange and structure (p. 80).... Changes will arise when the speaker/listener notices some variability in the signal and superimposes this variation upon the existing network, creating either additional options or a new rule reducing choices (p. 92).

Wozniak (1972) like Piaget states that forces of self-development are always present in reality as contradictory agents and tendencies which interact, effecting by leaps the transition from one qualitative form to another (p. 21).

Equilibration (A Neo-Piagetian Interpretation)

In Piaget's theory of cognitive development equilibration is the principle factor of development. It is a self-regulation function which "coordinates the various forces that come from physiological maturation and from the physical and social environment and that bear on the growing intelligence (Furth, 1969, p. 206)." For Piaget (Appel and Goldberg, 1977) "equilibration is the search for a better and better equilibrium in the sense of an extended field, in the sense of an increase in the number of possible composition, and in the sense of a growth in coherence (p. 12)."

The total organism with its structures "may be viewed as a system which is subject to modification through external intrusions. Equilibration is the process whereby the individual compensates for these intrusions (Palmer, 1970, p. 19)."

"In all cases, however, the attainment of a compensated balanced structure is the end goal of individual activity" (Presseisen, 1972, p. 138). Equilibration is explained by Piaget (1971) in two senses of the term: 1) it is a synchronous homostatic affair at any instant regulating the internal/external effects of the organism--assimilation/

accommodation and 2) it is a diachronic homeorhetic process regulating the differentiation and integration of a particular system with other subsystems and with the total organism--regulating growth over time (epigenesis).

Equilibration is Piaget's dialectic theory for cognitive development. It is probably the most complex notion in his grand theory of intellectual development. Furth (Appel and Goldberg, 1977) states the following for equilibration:

This notion is a difficult one for most students of Piaget, and at the moment Piaget is very much concerned with elaborating this concept. He is fleshing in, as it were, the concept of internal equilibration to make it more real and amenable to psychological investigation (p. 15).

The reader is warned that the present short definition given in this paper hardly does justice to Piaget's beautiful theory and a recommendation is made to read elsewhere (Chavez, 1978) to elaborate the essence of the concept. This paper borrows this complex equilibration theory concept and suggests its use and applicability heuristically in language development.

Presseisen (1972) states that man's psyche and his society are a continuing concern of Piaget's theory, but within the structural problem they are both seen through the filter of self-regulation (p. 141).

Language too will be seen in this paper through this equilibration filter. Although Piaget posits this equilibration factor

mainly for cognitively developing systems he might also posit it for any type of developing living system or subsystem, and therefore for the language system.

The decision to take a risk to equilibrate for a certain encounter is a function of three schemas:

- a. The available capacity or in other words, the capacity constructed so far.
- b. The available motivation or in other words, the motivation so far.
- c. The available amount of "trust" or "value judgement" (how much fixation/energy expended; how necessary this is in the organism's world; a choice to equilibrate or not!).

Or to summarize the above:

The amount of total conscious and subconscious knowledge of progressive, regressive or status-quo maintenance value that the probable equilibration might have for the person deciding.

The decision to equilibrate in a particular manner is a function of the present status of the mental structure.

Some of the probable successive and/or simultaneous occurrences/steps in the process of equilibration might be as follows:

1. Function
2. Structure
3. Recognition
4. Intrusion/protrusion/information/aliment
5. Conflict/contradiction/match-mismatch
6. Disequilibrium
7. Equilibration attempt
8. Assimilation/accommodation
9. Use of feedback

- 10. Feedforward strategies
- 11. Hypothesis testing
- 12. Trial/error
- 13. Result
- 14. Change
- 15. Reorganization
- 16. Certainty/adaptation
- 17. Refined structure
- 18. Refined function
- For 19. Same/similar tasks and until new intrusions, etc; and
- 20. Process begins again

Or

- 16. Uncertainty - back to steps
- 7-15. Equilibration attempt continues until
- 16. Some certainty reached

This dialectic process is assumed for any and all developing systems and subsystems, and therefore for the linguistic system.

Reigel (1975) accuses Piaget of not being dialectic enough and paying little attention to social interactions. This does not, however, render Piaget's theory undialectical. It means only that Piaget has applied the dialectical notion more to general intellectual types of knowledge and more to a specific type of knowledge, abstract logical development, than to other types including social ones. Other Genevans are probably focusing on these.

Furth (Appel & Goldberg, 1977) states the following:

In general, you must have noticed that Piaget's theory is full of what can be called dialectical terms; assimilation versus accommodation, organism versus environment, operative versus figurative and so on. Because of this bipolarity, the equilibration concept seems natural and almost necessary (p. 15).

Many instances have probably been found where isomorphisms can be drawn between cognitive and linguistic aspects. However, these are not the main concern of this paper. In the sense that language development is under the control of cognitive development and cognitive development under the control of equilibration--in this primary but somewhat indirect way does language development establish its relationship to equilibration in this neo-Piagetian interpretation.

In the neo-Piagetian suggestion presented here five instances of bipolarity or juncture points are shown where language could have a more direct relationship with the equilibration function. The five general points at which language begins to relate to equilibration are:

1. The first point is when one posits language as a relatively "open sub-system," wherein an external/internal polarity will require a third factor of equilibration.
2. The second point is when one sees language as a system which assimilates "aliment" unto itself and accommodates itself to "aliment" demands.
3. The third point of parallel is if we view *a fortiori* the development of language as a chreod bringing itself back on course, or an alternative one, through a homeorhetic process of regulation/equilibration when something has obstructed its necessary route or goal of development.
4. The fourth juncture point is when we see the necessity of a coordination between the language system with other subsystems and with the total whole.
5. And lastly, a fifth instance where language can be seen as a regulatory instrument itself in the sense of Halliday's (1973) language functions.

III. DUAL LANGUAGE DEVELOPMENT AND EQUILIBRATION:

ANALYSIS OF THE VALERIO STUDY

The literature on the psychology of bilingualism is of course very complex and only briefly will this paper outline the three main views in order to relate one of these to the equilibration model.

Traditional assumptions on what is taking place during dual language development are confusing. One traditional assumption stated the general independent relationship between the two languages. No influence of one on the other was assumed. In essence this made for the development of two language systems which created dual personalities. The second traditional view stated that the weaker language was dependent on the stronger one's semantic store. This slowed the thinking process down because time was needed for translations. Both of these views present a negative, confusing, and interfering state of psycholinguistic affairs to the person developing in this linguistic manner. This type of dissonance is not conducive to progression but to regression. The real world, of course, continued to present contradictory and more positive data in the form of bilingual persons who remained, in as many positive ways as the monolingual, normal.

A third alternative next proposed offered us the interdependent model (McCormack, 1977) which presented a generally positive mutual influence in this dual language partnership. Reigel (1968) states that interdependencies of two languages will produce both "facilitation as well as interference (p. 653)." Interdependence semantically implies a dialectic notion wherein coordination and complementary work help to define it. Facilitation and interference are polar terms which will require a coordination. It is in this sixth sense (in addition to the other five points for language in general) that an equilibration function can then be posited again. It is the interdependence model interpretation of dual language development that allows and requires an equilibration explanation, and vice-versa.

A particular study by Valerio (1980) is summarized generally and briefly and is presented here as an example of a probable dual language development/equilibration process.

Jose, a three-year old boy, is an above average boy from a middle class family which is very close-knit. Both his father and mother are Spanish/English bilinguals. Jose is a special case because many contemporary Spanish/English middle class parents have not consciously determined that their child will be bilingual right from birth as was the

case for Jose. Jose's bilingualism has been personally tested by the present writer either at his home or by telephone. One can choose whichever language (E/S) one likes and Jose will respond very expertly and accordingly including the appropriate combinations of the two, good Spanglish. The Valerio (1979) study describes the gradual (sometimes conservative) but steady and stable process of this bilinguistic acquisition.

For Jose his mother's language was English and his father's was Spanish from the first day of birth. From these two sources Jose developed psychological and sociological regulations. His cognitions of the social and physical world were mediated in two languages. From these two sources Jose developed linguistic and metalinguistic awareness of several types for both languages. And from these two sources Jose coordinated English and he coordinated Spanish and he coordinated the relationship between the two.

Besides his mother, his sister and the rest of the world spoke to him in English. Only his father spoke to him in Spanish and one day (between 30-33 months of age) he let his father know that he preferred English to Spanish. Valerio (1979) (the boy's father) comments on the fact that Jose "must have wondered why he was the only person who spoke Spanish to him. But this negative attitude was short-lived (three months) and thereafter no indications are

recorded about negative comments for Spanish. Valerio states that as Jose is undergoing his general cognitive equilibrations he uses both languages to show a) his feelings of accomplishments; b) his growth towards independence; c) his use of other people as instruments to achieve his goals; d) that he places blame on others when it is necessary to do so or be reprimanded; e) his need for resolving contradictions by both seeking for or giving explanations; f) his awareness of color, shape, size, number and quality; g) his use of symbolic representation; h) his belief in the permanence of objects and their quality, plus many other types of developments not documented here.

Valerio describes the development of vocabulary in Spanish by noting the progressive stages Jose goes through with "new perspectives with experience and maturation." Valerio describes Jose's development of English wh and yes/no questions and compares this development to Klima-Bellugi's (1966) monolingual English subjects. Jose arrives at comparable levels sooner than two of the three monolingual subjects. Valerio describes the development of the concept of negation in Jose and shows the similarity in this progression with the monolingual children and with bilingual children studied by Padilla and Lindholm (1976). Valerio uses the Padilla and

Lindholm study to compare Jose's development of Spanish interrogatives and negatives, and finds that he undergoes a similar pattern of development, and no indication of negative effects because of his bilingualism. Valerio compares the spontaneous development of certain Spanish language structures in Jose at three years and three months with a study by Gonzales (1971) in which these specific structures are elicited from children at this same and other levels. At three years and three months both Jose and the Gonzales children have an average of 26 of these structures. They compare well.

Valerio describes the awareness of and attitude toward each language separately and together by noting examples of Jose a) translating English into Spanish after his father pretended not to know English; b) code switching appropriately to the situation; c) asking for translations for himself; d) noting the special attention Spanish speakers give him because they are surprised when he talks to them in Spanish using endearing terms.

In comparing Jose to Fantini's study (1974) Valerio states that Mario (in Fantini) was raised in an environment where Spanish was highly valued. Jose is in an environment where the value of Spanish has been questioned for many years. In looking ahead for Jose, Valerio states that Jose's

"language behavior will very likely be affected by whether he (Jose) perceives situations as friendly or hostile for Spanish use."

Jose's Spanish and English language creations and interferences are found in the following areas during a transitional period:

- a) Use of Spanish and English words within the same utterance.
- b) Code switching at phrase boundaries.
- c) Modification of borrowed words with Spanish or English morphology.
- d) Use of English structure when forming Spanish possessives.
- e) Use of English stress for emphasis in Spanish sentences.

This process of language mixing yields some "interference" which is now seen also as creative attempts at integration of both languages to be used separately eventually but also as a third linguistic alternative if the occasion arises.

With an interdependent and equilibration model explanation of dual language development Jose's bilingualism becomes one unified and balanced special language case.

Lewis (1977) states:

Thus it is that the full meaning of one tongue cannot be translated to another, that we can speak several languages but normally live in only one...completely assimilating a language requires the speaker to assume its world... (p. 62).

Bilinguals assume two worlds but they assume them (or synthesize them) in a coordinated or complementary fashion which is now a third type of adaptation/equilibration. They assume both worlds interdependently but also, integrally as one too. In this sense it is the equilibration notion which explains or allows an interdependent explanation of dual language development.

According to Lewis (1977):

Accepting Merleau-Ponty's view according to which the body-subject's potential permits man to invent various emotions and to take diverse attitudes, i.e., to transcend his biological nature, we can see what differentiates various cultures and furnishes each one its unity. Each has its own gestures--physical and linguistic--according to his own dynamics (p. 62).

But man is the creator of culture, and the same then can be said for the special case of the bilingual/bicultural man who equilibrates and synthesizes according to his own dynamics.

This is one condition wherein a particular type of equilibration is called for in reconciling an internal/external balance/coordination between the two languages. But coordinations are a relative term--an ideal never fully

reached. At best it means that we are (given all the necessary conditions) at various levels of coordination vertically and horizontally between, within, and across the languages in question.

Monologically some linguistic aspects are easier to coordinate than others and this is the same case for bilingual development, except that there are now perhaps more in number and of a different nature than in unilingualism. Bilingual conditions give rise, of necessity, to an even more "open system" because there will always be different (if not more) ambiguities and contradictions to contend with during bilingual interactions--biadaptations. Reigel (1968) states that:

When both languages are introduced immediately after birth, the curve for the utility of coefficients originates at .5 and thereafter increases steadily, indicating that when combined, the amount of linguistic information under bilingual conditions surpasses at any age of evaluation the amount of information provided under monolingual conditions (pp. 649-650).

A process that relates to bilingual equilibration is what Reigel (1968) calls "the acquisition of interlingual transformation rules...which are dependent upon four interlingual conditions (pp. 653-656)." The process must take time and most probably reveals progressive levels/stages. Whether the progressive equilibrations are sequential and orderly, i.e., continuous and discontinuous is still another

question to pursue in research studies. However, Reigel (1968) does describe three levels with five stages in bilingual development (p. 654).

One of Reigel's (1968) implications for us is similar to many of the Piaget findings that state that "children will handle the more complex syntactic and semantic relations only when they are at stage V--third level (p. 655)." Reigel (1968) states that the "possibility of an information-generating system implies the development of shortcuts within the network of relations expanding the subject's knowledge and making his performance more efficient (p. 656)."

Certainly bilingualistic equilibrations must also aim at such efficient performances and beyond.

SUMMARY

To represent or symbolize to ourselves is a very abstract task. To construct a code or two which will serve as sign for our representations is also a very abstract task. The coordination of symbol with personal and with conventional sign(s) is a very abstract task. Yet children do these symbolic (and other wonderful) feats pretty well by age two. They must because one of the human essences is to think and to communicate which are an individual and a mutual experience respectively and also simultaneously.

In one sense there are operations and in another there are "co-operations." Both of these, in order to reach the most human form, will require social interaction. In this social dimension some sort of language will be constructed and elaborated--the most average and universal type of which is verbal-phonological speech. All of these tasks Jose has accomplished pretty efficiently by age three in two codes or two arbitrary signal systems which make up one psycho-social symbolic bilingualism, a bilingualism which appears to be in a relatively stable, yet mobile and dynamic

equilibrium both internally and outwardly. This child is precocious as far as 3-year-olds go and he is healthy and happy. Part of the credit goes to Jose's ready-made genetic structures and part to the ready-made structures in his social and physical world. But the third and most principle part is probably a product of an equilibration function which is operative (with its different and most probable strategies within each human) during a dialectical instant of interaction in an open system.

It appears that language is a particular type of progressive self-equilibration. This equilibrated system can help regulate other non-linguistic systems. Reciprocally non-linguistic systems help regulate language. And both linguistic and non-linguistic systems regulate the total organism both inwardly and outwardly. Like cognition, language, in order to reach its highest equilibrated forms, will require a physical and social interaction in order to build even more general mental/social structures which are then most probably logico-mathematical as well as metaphorical in nature in order to make a more/less complete construction/knowledge of that personal and cultural world.

Dual language development adds a sixth instant where equilibration plays a significant function. Dual language development adds an extra refinement or elaborative process of

differentiation for language in general and for
bilingualism in particular.

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